



Does Not Comply
Corrected Diskette Needed

1600

Errors on p. 3

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/469,200B

DATE: 05/13/2002

TIME: 14:53:02

Input Set : A:\seq listing.txt

Output Set: N:\CRF3\05102002\I469200B.raw

```

3 <110> APPLICANT: Weigel, Paul H.
4   DeAngelis, Paul
5   Kumari, Kshama
7 <120> TITLE OF INVENTION: Hyaluronan Synthase Gene and Uses Thereof
9 <130> FILE REFERENCE: 3554.011
11 <140> CURRENT APPLICATION NUMBER: US 09/469,200B
12 <141> CURRENT FILING DATE: 1999-12-21
14 <150> PRIOR APPLICATION NUMBER: US 09/178,851
15 <151> PRIOR FILING DATE: 1998-10-26
17 <150> PRIOR APPLICATION NUMBER: US 60/064,435
18 <151> PRIOR FILING DATE: 1997-10-31
20 <160> NUMBER OF SEQ ID NOS: 10
22 <170> SOFTWARE: PatentIn version 3.1
24 <210> SEQ ID NO: 1
25 <211> LENGTH: 1254
26 <212> TYPE: DNA
27 <213> ORGANISM: Streptococcus equisimilis
29 <400> SEQUENCE: 1
30 atgagaacat taaaaaacct cataactgtt gtggccttta gtatTTTTTtTg ggtactgttTg      60
32 atttacgtca atgtttatct ctttggtgct aaagggaagct tgtcaattta tggctTTTTg      120
34 ctgatagctt acctattagt caaaatgtcc ttatcctttt tttaacaagcc atttaaggga      180
36 agggctgggc aatataaggt tgcagccatt attccctctt ataacgaaga tgcctgagtca      240
38 ttgctagaga ccttaaaaaag tggtcagcag caaacctatc ccctagcaga aatttatgtt      300
40 gttgacgatg gaagtgtctg tgagacaggt attaagcgca ttgaagacta tgtgcgtgac      360
42 actggtgacc tatcaagcaa tgtcattgtt catcggtcag agaaaaatca aggaaagcgt      420
44 catgcacagg cctgggcctt tgaaagatca gacgctgatg tctTTTTtgac cgttgactca      480
46 gatacttata tctaccctga tgcttttagag gagttgttaa aaacctttaa tgaccaact      540
48 gtttttgctg cgacgggtca ccttaatgtc agaaatagac aaaccaatct cttaacacgc      600
50 ttgacagata ttgctatga taatgctttt ggcgttgaac gagctgcccc atccgttaca      660
52 ggtaatatcc ttgtttgctc aggtccgctt agcgtttaca gacgcgaggt ggttgcttct      720
54 aacatagata gatacatcaa ccagaccttc ctgggtattc ctgtaagtat tggatgatgac      780
56 aggtgcttga ccaactatgc aactgattta ggaaagactg tttatcaatc cactgctaaa      840
58 tgtattacag atgttctctg caagatgtct acttacttga agcagcaaaa ccgctggaac      900
60 aagtccttct ttagagagtc cattatttct gttaagaaaa tcatgaacaa tccttttgta      960
62 gccctatgga ccatacttga ggtgtctatg tttatgatgc ttgtttattc tgtggtggat      1020
64 ttctttgtag gcaatgtcag agaatttgat tggctcaggg ttttagcctt tctggtgatt      1080
66 atcttcattg ttgccctgtg tcggaacatt cattacatgc ttaagcaccg gctgtccttc      1140
68 ttgttatctc cgttttatgg ggtgtgcatc ttgtttgtcc tacagccctt gaaattatat      1200
70 tctcttttta ctattagaaa tgctgactgg ggaacacgta aaaaattatt ataa      1254
73 <210> SEQ ID NO: 2
74 <211> LENGTH: 417
75 <212> TYPE: PRT
76 <213> ORGANISM: Streptococcus Equisimilis

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/469,200B

DATE: 05/13/2002

TIME: 14:53:02

Input Set : A:\seq listing.txt

Output Set: N:\CRF3\05102002\I469200B.raw

78 <400> SEQUENCE: 2

```

80 Met Arg Thr Leu Lys Asn Leu Ile Thr Val Val Ala Phe Ser Ile Phe
81 1          5          10          15
84 Trp Val Leu Leu Ile Tyr Val Asn Val Tyr Leu Phe Gly Ala Lys Gly
85          20          25          30
88 Ser Leu Ser Ile Tyr Gly Phe Leu Leu Ile Ala Tyr Leu Leu Val Lys
89          35          40          45
92 Met Ser Leu Ser Phe Phe Tyr Lys Pro Phe Lys Gly Arg Ala Gly Gln
93          50          55          60
96 Tyr Lys Val Ala Ala Ile Ile Pro Ser Tyr Asn Glu Asp Ala Glu Ser
97 65          70          75          80
100 Leu Leu Glu Thr Leu Lys Ser Val Gln Gln Gln Thr Tyr Pro Leu Ala
101          85          90          95
104 Glu Ile Tyr Val Val Asp Asp Gly Ser Ala Asp Glu Thr Gly Ile Lys
105          100          105          110
108 Arg Ile Glu Asp Tyr Val Arg Asp Thr Gly Asp Leu Ser Ser Asn Val
109          115          120          125
112 Ile Val His Arg Ser Glu Lys Asn Gln Gly Lys Arg His Ala Gln Ala
113          130          135          140
116 Trp Ala Phe Glu Arg Ser Asp Ala Asp Val Phe Leu Thr Val Asp Ser
117 145          150          155          160
120 Asp Thr Tyr Ile Tyr Pro Asp Ala Leu Glu Glu Leu Leu Lys Thr Phe
121          165          170          175
124 Asn Asp Pro Thr Val Phe Ala Ala Thr Gly His Leu Asn Val Arg Asn
125          180          185          190
128 Arg Gln Thr Asn Leu Leu Thr Arg Leu Thr Asp Ile Arg Tyr Asp Asn
129          195          200          205
132 Ala Phe Gly Val Glu Arg Ala Ala Gln Ser Val Thr Gly Asn Ile Leu
133          210          215          220
136 Val Cys Ser Gly Pro Leu Ser Val Tyr Arg Arg Glu Val Val Val Pro
137 225          230          235          240
140 Asn Ile Asp Arg Tyr Ile Asn Gln Thr Phe Leu Gly Ile Pro Val Ser
141          245          250          255
144 Ile Gly Asp Asp Arg Cys Leu Thr Asn Tyr Ala Thr Asp Leu Gly Lys
145          260          265          270
148 Thr Val Tyr Gln Ser Thr Ala Lys Cys Ile Thr Asp Val Pro Asp Lys
149          275          280          285
152 Met Ser Thr Tyr Leu Lys Gln Gln Asn Arg Trp Asn Lys Ser Phe Phe
153          290          295          300
156 Arg Glu Ser Ile Ile Ser Val Lys Lys Ile Met Asn Asn Pro Phe Val
157 305          310          315          320
160 Ala Leu Trp Thr Ile Leu Glu Val Ser Met Phe Met Met Leu Val Tyr
161          325          330          335
164 Ser Val Val Asp Phe Phe Val Gly Asn Val Arg Glu Phe Asp Trp Leu
165          340          345          350
168 Arg Val Leu Ala Phe Leu Val Ile Ile Phe Ile Val Ala Leu Cys Arg
169          355          360          365
172 Asn Ile His Tyr Met Leu Lys His Pro Leu Ser Phe Leu Leu Ser Pro
173          370          375          380

```

RAW SEQUENCE LISTING

DATE: 05/13/2002

PATENT APPLICATION: US/09/469,200B

TIME: 14:53:02

Input Set : A:\seq_listing.txt

Output Set: N:\CRF3\05102002\I469200B.raw

176 Phe Tyr Gly Val Leu His Leu Phe Val Leu Gln Pro Leu Lys Leu Tyr
 177 385 390 395 400
 180 Ser Leu Phe Thr Ile Arg Asn Ala Asp Trp Gly Thr Arg Lys Lys Leu
 181 405 410 415
 184 Leu
 188 <210> SEQ ID NO: 3
 189 <211> LENGTH: 22
 190 <212> TYPE: DNA
 191 <213> ORGANISM: Synthetic
 193 <400> SEQUENCE: 3
 194 gctgatgaga caggtattaa gc
 197 <210> SEQ ID NO: 4
 198 <211> LENGTH: 20
 199 <212> TYPE: DNA
 200 <213> ORGANISM: Synthetic
 202 <400> SEQUENCE: 4
 203 atcaaattct ctgacattgc
 206 <210> SEQ ID NO: 5
 207 <211> LENGTH: 20
 208 <212> TYPE: DNA
 209 <213> ORGANISM: Synthetic
 211 <400> SEQUENCE: 5
 212 gactcagata cttatatcta
 215 <210> SEQ ID NO: 6
 216 <211> LENGTH: 17
 217 <212> TYPE: DNA
 218 <213> ORGANISM: Synthetic
 220 <400> SEQUENCE: 6
 221 tttttacgtg ttcccca
 224 <210> SEQ ID NO: 7
 225 <211> LENGTH: 1740
 226 <212> TYPE: DNA
 227 <213> ORGANISM: Paramecium bursaria chlorella virus
 229 <400> SEQUENCE: 7
 230 aagacttctt gaaagttaca atgggtaaaa atataatcat aatggtttcg tggtagacca 60
 232 tcataacttc aaatctaate gcggttgag gagcctctct aatcttggt cggcaatta 120
 234 ctgggtatgt tctacattgg aatattgtct tctcgacaat ctggggagta tcagcttatg 180
 236 gtattttcgt ttttggtttt ttccttgac aagttttatt ttcagaactg aacaggaaac 240
 238 gtcttcgcaa gtggatttct ctcagacctt aggggttgaa tgatgttcgt ttggctgtga 300
 240 tcattgctgg atatcgcgag gatccttata tgttcagaa gtgcctcgag tctgtacgtg 360
 242 actctgatta tggcaacgtt gcccgctctga tttgtgtgat tgacggtgat gaggacgatg 420
 244 atatgaggat ggctgccgtt tacaaggcga tctacaatga taatatcaag aagcccagat 480
 246 ttgttctgtg tgagtcagac gacaaggaa gtgaacgcac cgactctgat ttctctcgcg 540
 248 acatttgtgt cctccagcct catcgtggaa aacgggagtg tctttatact gggtttcaac 600
 250 ttgcaaagat ggacccagat gtcaatgctg tcgttctgat tgacagcgat accgttctcg 660
 252 agaaggatgc tattctggaa gttgtatacc cacttgcatg cgatcccag atccaagccg 720
 254 ttgcaggatga gtgtaagatt tggaacacag acactctttt gagtcttctc gtcgcttggc 780
 256 ggtactatct tgcgttttgt gtggagagga gtgcccgatc ttttttcagg actgttcagt 840
 258 gcgttggggg gccactgggt gcctacaaga ttgatatcat taaggagatt aaggaccct 900

invalid response, see error summary
 sheet item 10

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/469,200B

DATE: 05/13/2002

TIME: 14:53:02

Input Set : A:\seq listing.txt

Output Set: N:\CRF3\05102002\I469200B.raw

```

260 ggattttccca gcgcttttctt ggtcagaagt gtactttacgg tgacgaccgc cggctaacca 960
262 acgagatctt gatgcgtggt aaaaaggttg tgttactctc atttgctgtt ggttggtctg 1020
264 acagtcggac caatgtgttt cggtagatcg ttcagcagac ccgctggagt aagtcgtggt 1080
266 gccgcgaaat ttggtacacc ctcttcgcgc cgtggaagca cggtttgtct ggaatttggc 1140
268 tggcctttga atgtttgtat caaattacat acttcttctc cgtgatttac ctcttttctc 1200
270 gcctagccgt tgaggccgac cctcgcgcgc agacagccac ggtgattgtg agcaccacgg 1260
272 ttgcattgat taagtgtggg tatttttcat tccgagccaa ggatattcgg gcgttttact 1320
274 ttgtgcttta tacatttgtt tactttttct gtatgattcc gccagcagtt actgcaatga 1380
276 tgacgctttg ggacattggc tgggggtact gcggtggaaa cgagaagcct tccgttggca 1440
278 cccgggtcgc tctgtgggca aagcaatata tcattgcata tatgtggtgg gccgcggttg 1500
280 ttggcgtggt agtttacgac atcgtccata actggatgtt cgattggaat tctctttctt 1560
282 atcgttttgc tttggttggg atttgttctt acattgtttt tattgttatt gtgctggtgg 1620
284 tttatttcac cggcaaaatt acgacttggg atttcacgaa gcttcagaag gagctaactg 1680
286 aggatcgcgt tctgtacgat gcaactacca atgctcagtc tgtgtgattt ttctctgcaag 1740
289 <210> SEQ ID NO: 8
290 <211> LENGTH: 2937
291 <212> TYPE: DNA
292 <213> ORGANISM: Pastuerella Multocida
294 <400> SEQUENCE: 8
295 atttttttaag gacagaaaat gaatacatta tcacaagcaa taaaagcata taacagcaat 60
297 gactatcaat tagcactcaa attatttgaa aagtccggcg aaatctatgg acggaataat 120
299 gttgaatttc aaattaccaa atgcaaagaa aaactctcag cacatccttc tgttaattca 180
301 gcacatcttt ctgtaataaa agaagaaaaa gtcaatgttt gcgtagtcc gttagatatt 240
303 gcaacacaa cgttactttc caacgtaaaa aaattagtag tttctgactc ggaaaaaac 300
305 acgttaaaaa ataaatggaa attgtctact gagaagaaat ctgaaaatgc ggaggtaga 360
307 gcggtcgccc ttgtacaaa agattttccc aaagatctgg ttttagcgcc ttacctgat 420
309 catgttaatg attttacatg gtacaaaaag cgaaagaaaa gacttggcat aaaacctgaa 480
311 catcaacatg ttggtctttc tattatcggt acaacattca atcgaccagc aattttatcg 540
313 attacattag cctgttttagt aaaccaaaaa acacattacc cgtttgaagt tatcgtgaca 600
315 gatgatggta gtcaggaaga tctatcaccc atcattcgcc aatatgaaaa taaattggat 660
317 attcgctacg tcagacaaaa agataacggg tttcaagcca gtgccgctcg gaatatggga 720
319 ttacgcttag caaaatatga ctttatttggc ttactcgact gtgatatggc gccaaatcca 780
321 ttatgggttc attcttatgt tgcagagcta ttagaagatg atgatttaac aatcattggg 840
323 ccaagaaaaa acatcgatac acaacatatt gacccaaaag acttcttaaa taacgcgagt 900
325 ttgcttgaat cattaccaga agtgaatacc aataatagtg ttgccgcaa aggggaagga 960
327 acagtttctc tggattggcg cttagaacaa ttcgaaaaaa cagaaaatct ccgcttatcc 1020
329 gattcgcttc tccgtttttt tgcggcggtt aatgttgctt tcgctaaaa atggctaat 1080
331 aaatccggtt tctttgatga ggaatttaat cactgggggt gagaagatgt ggaatttggg 1140
333 tatcgcttat tccgttacgg tagtttcttt aaaactattg atggcattat ggcctaccat 1200
335 caagagccac caggtaaaga aaatgaaacc gatcgtgaag cgggaaaaaa tattacgctc 1260
337 gatattatga gagaaaagg ccttatatc tatagaaaac ttttaccat agaagattcg 1320
339 catatcaata gattacctt agtttcaatt tatatccag cttataactg tgcaactat 1380
341 attcaacgtt gcgtagatag tgcactgaat cagactgttg ttgatctcga ggtttgtatt 1440
343 tgtaacgatg gttcaacaga taatacctta gaagtgatca ataagcttta tggaataat 1500
345 cctagggtac gcatcatgtc taaaccaaag ggcggaatag cctcagcatc aaatgcagcc 1560
347 gtttcttttg ctaaagggtt ttacatttgg cagtttagatt cagatgatta tcttgagcct 1620
349 gatgcagttg aactgtgttt aaaagaattt taaaagata aaacgctagc ttgtgtttat 1680
351 accactaata gaaacgtcaa tccggatggg agcttaatcg ctaatgggtt caattggcca 1740
353 gaattttcac gagaaaaact cacaacggct atgattgctc accactttag aatgttcacg 1800

```

RAW SEQUENCE LISTING

DATE: 05/13/2002

PATENT APPLICATION: US/09/469,200B

TIME: 14:53:02

Input Set : A:\seq_listing.txt

Output Set: N:\CRF3\05102002\I469200B.raw

```

355 attagagctt ggcatttaac tgatggattc aatgaaaaaa ttgaaaatgc cgtagactat 1860
357 gacatgttcc tcaaactcag tgaagtggga aaattttaaac atcttaataa aatctgctat 1920
359 aaccgtgtat tacatggtga taacacatca attaagaaac ttggcattca aaagaaaaac 1980
361 cattttgttg tagtcaatca gtcattaaat agacaaggca taacttatta taattatgac 2040
363 gaatttgatg atttagatga aagtagaaag tatattttca ataaaaccgc tgaatatcaa 2100
365 gaagagattg atatcttaaa agatattaaa atcatccaga ataaagatgc caaaatcgca 2160
367 gtcagtattt tttatcccaa tacattaaac ggcttagtga aaaaactaaa caatattatt 2220
369 gaatataata aaaatatatt cgttattgtt ctacatgttg ataagaatca tcttacacca 2280
371 gatatcaaaa aagaaatact agccttctat cataaacatc aagtgaatat ttactaaat 2340
373 aatgatatac catattacac gagtaataga ttaataaaaa ctgaggcgca tttaaagtaat 2400
375 attaataaat taagtcagtt aaatctaaat tgtgaataca tcatttttga taatcatgac 2460
377 agcctattcg ttaaaaaatga cagctatgct tatatgaaaa aatatgatgt cggcatgaat 2520
379 ttctcagcat taacacatga ttggatcgag aaaatcaatg cgcattccacc atttaaaaaag 2580
381 ctcatataaa cttattttta tgacaatgac ttaaaaagta tgaatgtgaa aggggcatca 2640
383 caaggtatgt ttatgacgta tgcgctagcg catgagcttc tgacgattat taaagaagtc 2700
385 atcacatctt gccagtcaat tgatagtgtg ccagaatata aactgagga tatttggttc 2760
387 caatttgcac ttttaatctt agaaaaagaaa accggccatg tttttaataa aacatcgacc 2820
389 ctgacttata tgccttggga acgaaaatta caatggacaa atgaacaaat tgaaagtgca 2880
391 aaaagaggag aaaatatacc tgtaacaag ttcattatta atagtataac tctataa 2937

```

394 <210> SEQ ID NO: 9

395 <211> LENGTH: 972

396 <212> TYPE: PRT

397 <213> ORGANISM: *Pastuerella Multocida*

399 <400> SEQUENCE: 9

```

401 Met Asn Thr Leu Ser Gln Ala Ile Lys Ala Tyr Asn Ser Asn Asp Tyr
402 1 5 10 15
405 Gln Leu Ala Leu Lys Leu Phe Glu Lys Ser Ala Glu Ile Tyr Gly Arg
406 20 25 30
409 Lys Ile Val Glu Phe Gln Ile Thr Lys Cys Lys Glu Lys Leu Ser Ala
410 35 40 45
413 His Pro Ser Val Asn Ser Ala His Leu Ser Val Asn Lys Glu Glu Lys
414 50 55 60
417 Val Asn Val Cys Asp Ser Pro Leu Asp Ile Ala Thr Gln Leu Leu Leu
418 65 70 75 80
421 Ser Asn Val Lys Lys Leu Val Leu Ser Asp Ser Glu Lys Asn Thr Leu
422 85 90 95
425 Lys Asn Lys Trp Lys Leu Leu Thr Glu Lys Lys Ser Glu Asn Ala Glu
426 100 105 110
429 Val Arg Ala Val Ala Leu Val Pro Lys Asp Phe Pro Lys Asp Leu Val
430 115 120 125
433 Leu Ala Pro Leu Pro Asp His Val Asn Asp Phe Thr Trp Tyr Lys Lys
434 130 135 140
437 Arg Lys Lys Arg Leu Gly Ile Lys Pro Glu His Gln His Val Gly Leu
438 145 150 155 160
441 Ser Ile Ile Val Thr Phe Asn Arg Pro Ala Ile Leu Ser Ile Thr
442 165 170 175
445 Leu Ala Cys Leu Val Asn Gln Lys Thr His Tyr Pro Phe Glu Val Ile
446 180 185 190
449 Val Thr Asp Asp Gly Ser Gln Glu Asp Leu Ser Pro Ile Ile Arg Gln

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/469,200B

DATE: 05/13/2002

TIME: 14:53:04

Input Set : A:\seq listing.txt

Output Set: N:\CRF3\05102002\I469200B.raw